Guest Editorial Preface

Special Issue on EDA 2015

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The 11th French-speaking Workshop on Data Warehousing and Online Analysis (EDA 2015) took place in Brussels, Belgium, in April 2015. Over the years, the workshop offers a regular meeting to researchers, industrials, and users interested in the latest scientific and technological advances in this domain. The work presented at the 2015 edition covered advanced modeling aspects and novel technological approaches and comprises a unique combination of innovative theoretical results and successful applications.

This special issue of the Journal of Data Warehousing and Mining (IJDWM) originates from a call for papers sent out right after the workshop, in which we invited the authors of the highest ranked papers, according to the reviews carried out by the Program Committee members, to submit an extended version. After two rounds of reviews performed by additional experts the following papers were selected for publication in the special issue. We thank all reviewers for their commitment and dedication.

The paper "An experimental approach and monitoring tools for evaluating a Dynamic Cubing System" by Anne Tchounikine, Maryvonne Miquel, and Usman Ahmed presents an approach and various tools to evaluate the performance and assess the effectiveness of a solution in the context of dynamic cubing. Through experimental evaluation, the behavior and the performance of the alternative solutions can be analyzed and compared. The paper proposes an experimental workflow based on a set of configuration parameters to characterize the inputs (data sets, queries sets, and algorithm input parameters) and a set of metrics to analyze and qualify the output (performance and behavior metrics) of the solution. The paper identifies a set of tools necessary to develop an experimental evaluation strategy. These monitoring tools allow elaborating the execution scenarios, collecting output metrics, and storing and analyzing them online in real-time as well as later in off-line mode. Finally, the paper shows that the framework and the proposed environment help carrying out a rigorous experimental evaluation of a dynamic cubing solution.

The paper "OLAP Analysis Operators for Multi-state Data Warehouses" by Franck Ravat, Jiefu Song, and Olivier Teste aims at increasing the efficiency of analysis and facilitating the decision-makers' task. To this end, the authors propose a conceptual Multidimensional Data Warehouse (MDW) model keeping only reduced data over time. A MDW containing reduced data is modeled through a set of states. Each state consists of a star schema that is valid for a certain period of time. The paper then defines a set of OLAP operators that enables users to carry out analyses in a MDW composed of multiple states. For each operator, an algebraic definition, an execution algorithm and an implementation strategy in an R-OLAP environment are provided. Finally, the paper develops a multi-state analysis framework and shows the feasibility of the proposed concepts by illustrating how OLAP analyses are carried out through a graphical user interface.

The paper "TLabel: A New OLAP Aggregation Operator in Text Cubes" by Lamia Oukid, Omar Boussaid, Nadjia Benblidia, and Fadila Bentayeb proposes a new aggregation operator named Text Label (TLabel) for analyzing textual data in data warehousing and On-Line Analytical Processing (OLAP). The operator aggregates textual data into several categories based on an adaptation of the K-means algorithm to OLAP. For each class of documents, a document that represents the semantic content of documents of the same class is calculated. Each class is associated with a label that represents the semantic content of the textual data of the class. The paper presents an experimental study to validate the operator and the preliminary results show the interest of the proposed approach for Text OLAP.

The paper "Business Intelligence Indicators: Types, Models and Implementation" by Sandro Bimonte, Michel Schneider, and Omar Bousaid focuses on business decisional indicators, which are aggregated measures calculated from elementary data or from already aggregated data. The paper proposes a classification of these indicators based on three binary criteria which allow distinguishing eight types of indicators. The authors then propose an UML profile called Business Intelligence Indicators (BI2) that represents five of these types of indicators for OLAP, OLTP, and streaming technologies. The paper also presents an implementation of these types of indicators in existing industrial tools, namely relational DBMSs, relational OLAP tools, and Data Stream Management Systems (DSMSs). Finally, the authors show how these indicators can coexist in the same environment to exchange data through a chaining model and its implementation.

We hope the readers will enjoy this special issue as much as we enjoyed assembling it.

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